

What is claimed is:

1. A tester for verifying the integrity of wiring insulation in an electrical circuit comprising:
  - 5 an alternating current voltage source having a first and second output terminal leads;
  - a line lead wire connectable to a line conductor in said electrical circuit;
  - 10 a neutral lead wire connectable to a neutral conductor in said electrical circuit;
  - 15 a ground lead wire connectable to a ground conductor in said electrical circuit;
  - a first switch connected to one of either the first or second voltage source output terminal leads and switchable between either said line lead wire or said neutral lead wire;
  - 20 a second switch connected to the other of either the first or second voltage source output terminal leads and switchable between either said neutral lead wire or said ground lead wire; and
  - an ammeter connected in series with and between said voltage source and either said first or second switch.
- 25 2. The tester of Claim 1 wherein the alternating current voltage source is a step up transformer.
3. The tester of Claim 2 wherein the step up transformer steps up a house voltage to a test voltage substantially above the house voltage, but below a voltage rating of the wiring insulation.
4. The tester of Claim 2 wherein the step up transformer steps up a house voltage to approximately 500 volts.

5. The tester of Claim 2 wherein a first tester circuit, comprising a secondary winding of the transformer, the ammeter and the first and second switch, is current limited.
- 5 6. The tester of Claim 5 wherein the first tester circuit is current limited to approximately 5 ma.
7. The tester of Claim 2 wherein a primary winding of the transformer is connected in parallel with a light emitting diode which indicates when a test 10 is in process.
8. The tester of Claim 2 wherein a primary winding of the transformer is connected in series with a test switch that initiates and turns off a test.
- 15 9. The tester of Claim 8 wherein the test switch is a test button normally biased in an open circuit position.
10. The tester of Claim 2 wherein a first tester circuit comprises a secondary winding of the step up transformer, the ammeter and the first and second 20 switches and said tester further includes a second tester circuit comprising a pulse generator, a primary winding of a step down transformer connected to the pulse generator and a secondary winding of the step down transformer connected between the neutral lead wire and the ground lead wire.
- 25 11. The tester of Claim 10 wherein the secondary winding of the step down transformer is current limited.
12. The tester of Claim 11 wherein the secondary winding of the step down transformer is current limited to approximately 1 A.

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13. The tester of Claim 10 wherein the step down transformer steps down a house voltage to approximately 3 volts.
14. The tester of Claim 10 including means for disabling the second tester circuit when the first tester circuit is energized.
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15. The tester of Claim 14 wherein the means for disabling the second tester circuit comprises a normally closed relay switch in series with the secondary winding of the step down transformer.
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16. The tester of Claim 15 wherein an activation circuit of the relay is connected in parallel with a primary winding of the step up transformer so that the relay opens when the first tester circuit is energized.
- 15 17. A method of verifying the integrity of wiring insulation in an electrical circuit disconnected from a load, wherein the wiring includes at least line and neutral electrical conductors, comprising the steps of:
- isолating the electrical circuit from a main power supply;
- placing a preselected voltage across the line and neutral electrical conductors of the wiring, which is substantially larger than a voltage rating of the main power supply, but below a voltage rating of the wiring; and
- monitoring the leakage current flowing through the wiring to identify a predetermine leakage current indicative of failure of the wiring insulation.
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18. The method of Claim 17 including the step of limiting the leakage current to at or below 5 ma.
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- 30 19. The method of Claim 17 wherein the wiring includes a ground electrical conductor and the placing step sequentially places the preselected voltage

across the line and neutral electrical conductors of the wiring, across the line and ground electrical conductors of the wiring and across the neutral and ground electrical conductors of the wiring.

- 5 20. The method of Claim 19 wherein if the predetermined leakage current is detected including the steps of:

removing the preselected voltage from across the line and neutral electrical conductors of the wiring, from across the line and ground electrical conductors of the wiring and from across the neutral and ground electrical conductors of the wiring;

placing a pulsed current source having a voltage substantially less than the voltage of the main power supply across the neutral and ground conductors of the wiring;

checking with an ammeter for a pulse current along the neutral or ground electrical conductor of the wiring, and if a pulsed current is detected along the ground or neutral electrical conductor of the wiring within the vicinity of the pulsed current source;

moving the ammeter along the neutral or ground electrical conductor in a direction away from the pulsed current source until the pulsed current is no longer detected to identify the location of a shared/grounded neutral.

21. The method of Claim 20 including the step of limiting the pulsed current to approximately 1 A.